

CLAIMS

WHAT IS CLAIMED IS:

1. An offshore oil well riser system extending from a floating vessel on the sea surface to a sub-sea well equipment located on the sea floor, the riser system comprising:
 - 5 an elongated, substantially vertical section of pipe supported by the floating body and extending downward towards the sea floor;
 - an elongated, substantially horizontal section of pipe connected to the sub-sea well equipment;
 - an angled elbow section of pipe connecting the vertical pipe section to the horizontal pipe
 - 10 section such that the vertical and horizontal pipe sections resiliently flex in a direction generally perpendicular to their respective long axes in response to motion of the floating vessel. and,
 - an elongated flexing portion of pipe disposed axially within at least one of the vertical and the horizontal pipe sections and arranged therein to resiliently flex in directions both generally perpendicular and parallel to its long axis in response to motion of the floating vessel.
- 15 2. The riser system of claim 1, wherein the flexing portion of pipe comprises a plurality of recurvate sections of pipe connected end-to-end with alternating curvatures.
3. The riser system of claim 1, wherein the flexing portion of pipe is disposed in the vertical, the horizontal, or both the vertical and the horizontal sections of pipe.
4. The riser system of claim 1, wherein a central axis of the flexing portion of pipe lies in
- 20 a single plane.
5. The riser system of claim 1, wherein the flexing portion pipe is generally sinusoidal in shape.
6. The riser system of claim 1, wherein the flexing portion of pipe is generally helical in shape.
- 25 7. The riser system of claim 1, wherein the flexing portion of pipe has a two-dimensional shape.

8. The riser system of claim 1, wherein the flexing portion of pipe has a three-dimensional shape.